

NON-PUBLIC?: N  
ACCESSION #: 9304010205  
LICENSEE EVENT REPORT (LER)

FACILITY NAME: Peach Bottom Atomic Power Station - PAGE: 1 OF 3  
Unit 3

DOCKET NUMBER: 05000278

TITLE: Automatic Scram on Reactor Water Level when a Reactor  
Feed Pump Tripped on High Vibrations  
EVENT DATE: 03/07/93 LER #: 93-002-00 REPORT DATE: 03/26/93

OTHER FACILITIES INVOLVED: DOCKET NO: 05000

OPERATING MODE: N POWER LEVEL: 023

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR  
SECTION:  
50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:  
NAME: Anthony J. Wasong, Regulatory TELEPHONE: (717) 456-7014  
Supervisor

COMPONENT FAILURE DESCRIPTION:  
CAUSE: E SYSTEM: SK COMPONENT: HIC MANUFACTURER: M422  
REPORTABLE NPRDS: N

SUPPLEMENTAL REPORT EXPECTED: NO

ABSTRACT:

On 03/07/93 at 23% rated power, the "C" Reactor Feed Pump (RFP) tripped and the "B" RFP failed to respond. This caused the Reactor water level to decrease to the low level scram setpoint. Primary Containment Isolation System (PCIS) Group II/III isolations also occurred when the Reactor water level decreased. The "A" RFP was placed in-service to restore Reactor water level. The PCIS and the Reactor Protection System (RPS) scram logics were reset. The cause of the scram has been determined to be an unexpected trip of the "C" RFP on a high vibration condition. An investigation has been performed and concluded that a damaged vibration element in conjunction with a rough turbine shaft caused the false high vibration indication and the "C" RFP trip. A defective controller in the "B" RFP control logic caused the pump to fail to respond during the transient. The vibration element on the "C" RFP

was replaced and the lubrication spray nozzle was repositioned. Similar elements on the other RFPs were inspected and found to be satisfactory. The shaft roughness on the "C" RFP will be addressed during a future outage. The defective controller on the "B" RFP was replaced and setup. An evaluation will be performed on the defective controller to identify if additional corrective actions are necessary for other similar type controllers. This corrective actions will be based on the cause of the "B" RFP controller failure. No previous similar events have been identified.

END OF ABSTRACT

TEXT PAGE 2 OF 3

### Requirements of the Report

This report is being submitted pursuant to 10 CFR 50.73 (a)(2)(iv) due to Engineered Safety Feature (ESF) actuations.

### Unit Conditions at Time of Event

Unit 3 was in the "RUN" mode at 23% of rated thermal reactor power. The unit was at a reduced power to repair Main Turbine instrumentation. The "A" Reactor Feed Pump (RFP) (EIIS:SK) was out of service, the "B" RFP was in standby (manual mode), and the "C" RFP was in-service to control Reactor water level. There were no other systems, structures, or components that were inoperable that contributed to the event.

### Description of the Event

On 03/07/93 at approximately 0720 hours, while attempting to reduce the vibration levels on the "C" RFP, the "C" RFP tripped and the "B" RFP failed to respond. The trip of the "C" RFP and the failure of the "B" RFP to respond caused the Reactor water level to decrease to the low level scram setpoint. In addition, Primary Containment isolation System (PCIS) (EIIS:JM) Group II/III isolations also occurred when the Reactor water level decrease below 0". The "A" RFP was placed in-service to restore Reactor water level. At 1932 hours, the PCIS logics were reset and the affected systems were restored to the appropriate configuration. The NRC was notified of the event via ENS at 2001 hours. In addition, the Reactor Protection System (RPS) (EIIS:JC) scram logics were reset.

### Cause of the Event

The cause of the scram has been determined to be an unexpected trip of the "C" RFP on a high vibration condition. A Reactor Operator (RO) (Utility:

Licensed) was in the process of opening the "C" RFP minimum flow valve in an attempt to reduce the vibration levels. An investigation has been performed and concluded that a damaged vibration element (VBE-5770C) (EIIS:VT) in conjunction with a rough turbine shaft caused the false high vibration indication and the "C" RFP trip. The element failed due to the lack of lubrication oil flow between the shaft and the element. The lubrication oil is sprayed onto the shaft using a nozzle for directional control. The nozzle was not aligned by Nuclear Maintenance Department (NMD) (Utility:Non-Licensed) personnel during the last Refueling Outage in the fall of 1991. The alignment did not ensure good lubrication of the vibration element. The vibration monitor is located at the outboard bearing on the "C" RFP and is manufactured by General Electric (GE). In addition, the "C" RFP turbine shaft had rough spots which contributed to the false vibration levels.

#### TEXT PAGE 3 OF 3

A defective controller (HCS-3-06-084B) (EIIS:HIC) in the "B" RFP control logic caused the pump to fail to respond during the transient. The failed controller will be returned to the manufacturer to determine the cause of the failure. The controller is located in the Main Control Room and these type controllers are Moore industries model 352EA21.

#### Analysis of Event

No actual safety consequences occurred as a result of this event.

All isolations and initiations functioned per design. Had this event occurred at 100% power, initiations and would have functioned per design.

#### Corrective Actions

After the scram occurred, the appropriate PCIS and RPS scram logics were reset and the affected systems were reset to the appropriate configuration.

The vibration element on the "C" RFP was replaced and the lubrication spray nozzle was repositioned. The shaft roughness on the "C" RFP will be addressed during a future outage. Similar Unit 3 RFP vibration elements and nozzles were inspected and found to be satisfactory. The Unit 2 RFP vibration elements will be inspected during a future outage. There is no indicated concerns on the Unit 2 RFP vibration monitors at this time.

An evaluation will be performed on this event to identify what corrective actions are needed to minimize future misalignment problems. The pertinent information from this event will be provided to the appropriate NMD personnel.

The defective controller on the "B" RFP was replaced and properly setup. An evaluation will be performed on the defective controller to identify if additional corrective actions are necessary for other similar type controllers. This evaluation will be based on the failure mode of the "B" RFP controller.

#### Previous Similar Events

No previous similar events have been identified which involved loss of the RFPs due to a defective vibration monitor or a failed controller.

ATTACHMENT 1 TO 9304010205 PAGE 1 OF 1

CCN 93-14036

PHILADELPHIA ELECTRIC COMPANY

PEACH BOTTOM ATOMIC POWER STATION

R. D. 1, Box 208

DELTA, PA 17314

(717) 456-7014

KEN POWERS  
PLANT MANAGER

March 26, 1993

Docket No. 50-278

Document Control Desk  
U. S. Nuclear Regulatory Commission  
Washington, DC 20555

SUBJECT: Licensee Event Report  
Peach Bottom Atomic Power Station - Unit 3

This LER concerns an automatic scram on Reactor water level when a Reactor Feed Pump tripped on high vibration.

Reference: Docket No. 50-278  
Report Number: 3-93-002  
Revision Number: 00 Event

Date: 03/07/93

Report Date: 03/26/93

Facility: Peach Bottom Atomic Power Station

RD1, Box 208, Delta, PA 17314

This LER is being submitted pursuant to the requirements of 10 CFR 50.73(a)(2)(iv).

Sincerely,

cc: J. J. Lyash, US NRC Senior Resident Inspector

T. T. Martin, US NRC, Region I

\*\*\* END OF DOCUMENT \*\*\*

---